QUANTEL PAINTBOX

APPENDIX TO USER GUIDE

ANIMATION AND TYPOGRAPHY SOFTWARE V2.00A September 1983

1. PAINTING MODE

Two new facilities have been included in the painting menu - Colour Map and Mosaic.

On selection of PAINTING, the following boxes are displayed in the right hand column of the menu -

COLOUR MAP
MOSAIC
2H 2V

1.1 COLOUR MAP

This facility, in simple terms, allows the user to assign new colours to areas of a picture, based on the luminance levels within the picture. This means that the user now has access to a whole range of 'colour laboratory' techniques, such as posterisation and solarisation. It is also possible to use colour mapping to enchance the contrast of, e.g. a poor black and white image from live video input. This overcomes some of the problems

associated with the input of artwork via camera for subsequent use as an overlay or stencil.

This facility uses the palette as the colour map. Dark areas of the picture will be assigned colours displayed on the LEFT hand side of the palette mixing area, and light areas the RIGHT. For example, if you select PAINT and colour the palette black to the left and white to the right, with the boundary between the two colours in the centre, selection of COLOUR MAP will cause the picture to be rendered as a black and white line image, much in the manner of a PMT. Movement of the black/white boundary in the palette to the left or right will cause corresponding variations in the contrast of the resulting picture. Softening of the black/white boundary by use of the air brush will result in a softening of the resulting image. Exciting and sometimes bizarre effects may be obtained by introducing colour into the palette area - experiment will be rewarded.

NOTE: To save time, store the picture to be worked on in the SAVE PIC. file prior to colour mapping : this speeds experiment as unsuccessful attempts may be aborted by tapping down with the pen.

1.2 MOSAIC

An interesting facility which allows the conversion of a picture into a 'block-picture'. The two small green boxes in the menu refer to the size of the mosaic 'tiles' or blocks in terms of horizontal and vertical units. Press 2H and the box will illuminate pink. Use of the joystick will now allow you to alter the number up or down. Press 2V and select the vertical dimension of the 'block' in units. Now select MOSAIC. As with COLOUR MAP, experiment and use SAVE PIC.

Green boxes can always be 'opened' by pressing on them. They then turn pink and the joystick can be used to change the number. Pressing again 'closes' the box so the number is fixed.

Colour Map and Mosaic can be aborted at any time by pressing down on the tablet with the pen.

2. GRAPHICS MODE

2.1 The GRID facility has been improved and extended and moved to the STENCIL menu.

2.2 When RECTANGLES is selected, note that, below SOLID in the menu, there is now a box marked GRADUATED with a smaller box to its right. If one selects GRADUATED and subsequently draws a rectangle, that rectangle will be graduated in colour from, at the top, the colour currently on the brush, to, at the bottom, the colour displayed in the small box at the right. Thus if, for example, you wish to have the entire screen graduated from blue at the top to white at the bottom, for use as a background, select white and deposit it in the small box. Select blue and, removing the menu, or palette, tap down at the extreme top left corner of the picture and extend the resultant rectangle to the extreme bottom right hand corner. PRESS down. Note that this facility can be used in conjunction with the stencil and so any shape and its background may be graduated. Graduation of colour other than in a vertical sense may obviously be achieved by cutting and rotating.

3. LIBRARY MODE

There are two new items that may be saved in the library - sequences and stacks.

a. SEQUENCE — A recorded sequence; see ANIMATION section of this appendix.

b. STACK — A stack of cells for limited area animation see ANIMATION section.

NOTE: SEQUENCE INSERT refers to a stored sequence which is to be inserted into another sequence. See ANIMATION section.

4. STENCIL

GRIDS

The stencil menu includes the facility for generating an invisible grid which, when used, constrains the position of the cursor. Grids may be active when using GRAPHICS functions and when positioning a paste item.

Selecting USE GRID causes DEFINE GRID to appear and selecting this allows one to define a grid. This may be done in two ways. Pressing WHOLE PIC will divide the picture area into the numbers of rows and columns in the green boxes. Selecting SQUARE forces the grid to be square so only one number is required. Because of the aspect ratio there are more rows than columns. WITH CURSOR allows the user to draw a rectangular box that defines the basic cell size and position. The cell is also subdivided by the numbers in the green boxes. Wipe off the menu and press down at one

with the opposite corner following the pen. Pull out to the required size and tap down. The grid is now defined and the cursor will be constrained to intersections of the grid.

The CENTRED box can be activated at any time and causes a grid to be re-positioned such that rows and columns are evely positioned either side of screen centre.

5. PASTE UP

In many ways this is the menu most affected by the animation and typography package. For ease of understanding, this section will cover only those new aspects of the menu which relate to pasting-up of cutouts and type. For topics related to animation procedures, see Animation.

As mentioned previously, the grid facility may now be used in conjunction with pasting-up, so, if USE GRID has been selected, the relevant control boxes will be displayed when PASTE is pressed.

When PASTE is selected, it will be noted that the menu is greatly changed, having several new command boxes:

CUT	STICK	OUTLINE
CUT SHAPE	FLIP	SURROUND
TEXT	TUMBLE	SOLID
PASTE	ROTATE 90	DROP SHADOW
	REPLICATE	EMBOSSED

REPLICATE is part of the animation package. The right hand column of commands relate to the manner in which a cut-out or line of type is pasted

down. For the sake of this publication we will refer to type, but please note that all comments apply equally well to any cut-out.

5.1 OUTLINE

The type is pasted down in outline form, adopting the brush colour. Note that the centre is 'transparent'. The procedure as with all these new commands, is to select colour, select style, (e.g. OUTLINE) paste in position and select stick.

5.2 SURROUND

This allows type to have a surrounding border in a second colour.

Select the desired outline border colour and deposit it in the small box which appears to the right of the SURROUND box when this has been pressed. The pick up the desired colour for the centre of the type, leaving it on the brush as one pastes and sticks.

5.3 SOLID and DROP SHADOW

There are two ways of giving type a drop shadow: DROP SHADOW, which is a true shadow, displaced from the type itself, and SOLID, which 'in-betweens' between the letter form and its shadow. Both functions are controlled in the same way.

On selection of, for example, DROP SHADOW, note the appearance of three new boxes:

a. A box where the shadow colour should be deposited (similar function to SURROUND above).

b. A green box containing an arrow. The angle of the arrow determines the direction in which the shadow will lie. Press the box and it will illuminate pink. Rotary movement of the joystick will move the arrow to one of eight different directions. Once the desired angle is displayed, keep your finger on the joystick, and press down in the box again so that it reverts to green.

c. A green box containing the legend 4 UNITS. This controls the depth of displacement of the shadow. Press to illuminated pink and use the joystick to adjust the number of units as desired. Experiment will show the effect of differing values for this function.

The percentage green box allows the transparency of the shadow to be varied.

Once all the relevant factors have been selected - shadow colour, shadow angle, shadow depth, letter colour and position - press STICK to achieve the desired effect.

The PIC box next to SOLID only applies when pasting picture cutouts and has no effect with cut text. When PIC is selected, pressing SOLID initiates a series of multiple pastes that build up a solid shadow consisting of the picture cutout itself and creating a 3-D effect. The effect can be used with text that has been cut out from a picture using a stencil matching the text.

5.4 EMBOSSED

This is an extremely attractive feature which allows one to 'emboss' type on to a picture regardless of the complexity of the underlying image. On selection, note the appearance of the green arrow box. This allows one to

determine the angle from which the 'light' falls on the 'embossed' lettering; e.g. Arrow to the south-east sector - lettering appears to be embossed in bas-relief. Arrow to the north-west sector - lettering is impressed into the picture!

5.5 USE GRID

If USE GRID is selected in the STENCIL menu it is active during PASTE-UP and a blue box appears. Two other boxes ALIGN H and ALIGN V are found if USE GRID is active.

If ALIGN H is selected then the paste item is constrained vertically but can be positioned anywhere horizontally.

ALIGN V contains the item horizontally but allows vertical positioning. When ALIGN V is selected L C R boxes appear. These permit type to be ranged left, centred, or right of the grid.

6. THE FULL PAGE MENU

Reselection of the current menu calls up the full page menu, as before. Users will note, however that there are now two options - ASSORTED and SEQUENCE, selection of the ASSORTED menu reveals the existing full page menu, with the addition of QWERTY.

6.1 QWERTY

This allows the user to chose between ABCD and QWERTY format for the 'soft' keyboard display when using TEXT or LIBRARY.

6.2 SEQUENCE

When this box is selected it sets the top row of keys of the hard keyboard to sequence editing functions. See ANIMATION.

7. TYPOGRAPHY

The Paintbox now has a type handling system to match the superlative quality of its letter forms. Furthermore, an extremely comprehensive type library has been established, drawing its material from prime typographic sources round the world. One benefit of this arrangement is that typefaces are properly licensed for unlimited use by the purchaser and, or course, they are not copies or approximations of typefaces, but the real thing.

The type is stored in the LIBRARY, as before, and individual typefaces may be input from floppy disc, so that users may build a type library of their own from the many hundreds of faces available.

7.1 TEXT

Text generation is within the PASTE-UP menu. Hit the TEXT box and a keyboard appears. It will now be seen that the keyboard display has been changed, several new features having been added. The most fundamental change is that the line of type being produced now appears at the top of the screen, black on white with a cursor to indicate position of work. The keyboard display itself it also changed, with a blue panel at the top, indicating the typeface currently in use, and control of line height, letter-spacing etc., assigned to new boxes on either side of the keyboard itself.

By touching UPPER, LOWER and OTHER boxes, the keyboard will change to capitals, lower case and pi characters. A cursor bar at the end of the row of text indicate where the next letter will be entered, which is to the left of the cursor. The cursor can be moved by tapping a letter with the pen so that a character may be inserted. DELETE removes the character above the cursor. The two boxes HEIGHT and KERN control the size and letterspacing of the whole line of text. Touch the green panel under HEIGHT. This 'opens' the box and it will turn pink. You are then able to use the joystick to change the number in the box, which controls the size of the type. Tapping the box again causes the height of the text to be adjusted and 'closes' the box. The KERN box adds or subtracts space between letters.

7.2 EDIT

Selecting this box switches to functions that apply to only the one character above the cursor. HEIGHT then alters that character only and KERN the spacing to the left of it. FLIP and TUMBLE also operate on the one character and have immediate effect on hitting the boxes. JUMP shifts the character up or down relative to the baseline. This feature can be used to create fractions by reducing numerals in size and shifting up or down. Turning the EDIT box off returns one to the keyboard.

7.3 AN EXERCISE

In order to familiarise yourself with the typographic function on the Paintbox, I would suggest the following exercise:

Set the HEIGHT BOX at 40 lines and the KERN box at 0 units. Using either the mini keyboard on the screen or your stand alone keyboard input:

The Type Box!

You now have the letters you want in 40 lines with normal letterspacing. Now touch the HEIGHT box, changing from 40 to 60 with the joystick and touch HEIGHT again to turn it off. You will see that the Paintbox rejustifies and sizes the type up to 60 lines. To add space between the letters touch the KERN box and with the joystick change the UNITS to read +10; touch the box again and you have enlarged the overall type and added 10 units of space between each individual character. Experiment with changing the spacing and the size of the letter forms.

At this point, let us assume you have composed the letters and basic spacing of the line you wish to set at 60 lines, -3 units. However, you will probably wish to change individual character combinations such as the capital "T", lower case "y". You are now ready to EDIT the type that you have on the screen. With the EDIT box invoked one is able to address specific character combinations and change the spatial relationship between them. Simply touch the EDIT box and the keyboard is replaced by a second HEIGHT and KERN box along with FLIP, TUMBLE, JUMP and DELETE. If you touch your cursor on the lower case "y" on the screen, you will note that the cursor moves underneath that letter. Now, touch the KERN box and change -3 units to -10 units. Touch the KERN box again and you will see that the lower case "y" has moved closer to the capital "T". Next touch the cursor on the "p", change the KERN box to +2 units, touch the KERN box again and you will see that you have opened up the spacing between the "y" and the "p". In order to change word spacing, touch your cursor on the

"B" and change the KERN to -22. Repeat the process to change the space between the exclamation point and the word "Box".

Once you have composed the type as you wish, touch CUT TEXT or hit the RETURN key on the main keyboard. Swipe off the menu and you will have the text in the last brush colour. By going to the palette and choosing a different colour, you will see that you text changes accordingly. Position the type and touch STICK to 'burnish' it in place. When you swipe off the menu again, you will have a duplicate of the type you have just positioned. You may then change colour and invoke the FLIP, TUMBLE or ROTATE 90 commands or use the joystick to rotate to achieve the desired effect.

7.4 GENERAL TEXT NOTES

The main keyboard has left and right arrow keys which can be used to move the text cursor. The down arrow key places the text cursor at the end of the current line of text.

New characters are always inserted into the existing text at the cursor position and the RUBOUT box (or the delete key on the main keyboard) will always rubout the character to the left of the cursor (normally the last character entered).

Additional functions of the main keyboard: pressing the CNTRL and DELETE keys together has the same effect as touching the CLEAR box on the menu and the RETURN key has the same effect as touching the CUT TEXT BOX.

It is possible to select a combination of more than one typeface, although no more than four typefaces may be used at one time.

8. ANIMATION

Animation has always been an exciting capability of the Paintbox and, generally speaking, all the comments on this subject in the User Guide still apply. The new software package, however, adds two new features which improve and extend the existing abilities of the system to a remarkable degree. These two features are:

a. A learning, or recording, system which permits the user to record, for example, linear paste-up procedures.

b. A limited area frame-cycling ability, which allows the user to substitute a cycling animated image, e.g. a walking figure, for the 'flat' cutout hitherto available for animation.

Naturally, these two features may be used in combination and, together with the ability to define priorities in a picture by means of the stencil they amount to a most powerful system for animating a whole variety of applications.

The first of these two features is to be found in the SEQUENCE full page menu.

8.1 SEQUENCES

In its essentials, this feature gives the Paintbox all the facilities of a VTR, allowing the recording, playing-back and editing of any painting or paste-up sequence. Although the facility is contained within the Paintbox itself and there is no tape, the control functions are really very similar to a VTR. Thus one can record a sequence, play it back at different speeds with or without the menu being displayed on playback, rewind and shuttle backwards and forwards through a sequence frame-by-frame, set tags and

remove unwanted sequences, and set cue points for controlled playback. The sequence can subsequently be stored in the library as such and, provided one then reselects the necessary elements from the library, e.g. PIC STENCIL and CUTOUT or STACK, be re-played at will. Note that PAINTING and GRAPHICS functions can also be recorded.

SEQUENCE has been added to the full page menu. When this box is selected it sets the top row of keys of the keyboard to sequence editing functions.

Whilst this box is active a sequence may be created at any time. Hitting the record key (Ø) starts a recording of all system activity. STOP (2) stops the recording.

REPLAY (1) will cause the recording to be replayed. STOP will stop it at any time. REWIND (3) will ensure the next replay will start at the beginning. On the full page menu the following boxes apply to replay.

SHOW MENU - if this is off menus and palette selections will not be displayed.

FAST, SLOW, NORMAL - control the replay speed.

8.2 EDITING A SEQUENCE

To edit hit REWIND (3) then SHUTTLE (4) this will place cursor at the start of the sequence. Use the joystick to advance the cursor. Right is for forward. Left is for reverse. Down left and down right are slower.

To DELETE hit SET TAG (5) at the start of the section to be deleted. Hit DELETE (6) at end of section and it is removed.

To INSERT hit INSERT (8) at start point, then paint or do what you want then hit STOP (2).

8.3 INSERTING CUE POINTS

To wait for a cue during replay a cue point may be inserted. Use shuttle to select point then hit INSERT CUE POINT key (7). On replay the sequence will stop at this point and wait for the space bar to be pressed. If switch 4 of HD of the configuration switches is on, a flashing cue dot will appear in the top left hand corner or the screen.

8.4 CELL ANIMATION

This allows the user to develop cartoon style animation with animated figures etc., or even to execute colour cycling or, say, captions.

The technique is extremely simple to use and, as with all Paintbox functions, there are very few limitations other that the users imagination. The one limitation is that of size, this function being a limited area facility. Briefly, the facility allows one to select an element or image, e.g. a cartoon figure, cut it out, using the stencil, and then treat this cut out as the first in a series of cels or frames which may be displayed in the manner of a film strip across the picture. Each cel may then be worked on, using all the usual functions of the Paintbox, to provide a progressive frame-by-frame alteration. These cels may then be assembled into a STACK and be cycled in different ways and at any speed, the resultant animated image being controlled by the stylus : thus ones' cartoon figure may be 'walked' through, for example, a picture stencil and be recorded, as above. From the foregoing, users will appreciate that the larger the initial image or cel, the fewer the frames

that will fit on the screen to form the 'film strip' and thus the coarser the subsequent animation. For most cartoon style applications, it has been found that a cut-out size representing about one twelfth or one sixteenth of the screen area is adequate, whilst a flashing caption requires only two or three frames and thus can occupy a half to a third of the picture.

The technique is as follows:

1. Draw or select the image to be animated. (Note that his image may be part of a frozen live video input, a caption, a graph, etc.)

2. Cut out, using the stencil as necessary. Note that a cartoon figure, for instance, will need to be cut out with a stencil, as one requires it to be discrete and not surrounded by a rectangular panel. Note also that it is the size of the yellow cutting out rectangle which determines the size of the resultant cel and therefore the number of frames in the 'film strip' display. Obviously the image may be drawn at a large scale and the cut out reduced in size subsequently.
3. Select PASTE and display the cut out. (Failure to do this invalidates the rest of the procedure.)

4. Remaining in the PASTE UP menu, select REPLICATE. This multiplies the cut out across the screen, forming the 'film strip' from which to build the stack.

5. You will observe that a new panel now appears in the PASTE UP menu - ANIMATE.

6. Use the Paintbox to achieve the required progressive modification of each cel. Note that PAINTING, GRAPHICS, PASTE UP, STENCIL etc., may all be used to this end. One may magnify the cels, if required.

7. In achieving the planned progressive movement, it is helpful to be able to modify a cel, drop a duplicate of it in the frame next door, re-modify, duplicate again, and so on. Select ANIMATE, revealing two new control panels:

MOVE CEL
MAKE STACK

Select MOVE CEL, swipe off the menu and touch down with the stylus on the required cel. This may now be picked up and dropped down in any frame in perfect pin register. Reselect the required menu - PAINTING etc., modify, reselect ANIMATE, swipe off and remove cels as necessary.

8. Once the progression is complete, one now builds the frames into a stack, ready for cycling. Return to ANIMATE and press MAKE STACK. Swipe off the menu and touch down with the stylus on the frame you require to be played first.

9. This frame will now be displayed individually, with a panel at the top of the screen thus:

NO. OF FRAMES	0	OFFSET NO. 1
RUNNING TIME	0 SECS	

Note that the offset number refers to the frames position in the 'film-strip' rather than its position in the stack. RUNNING TIME refers to the total elapsed time of the stack, assuming replay at the standard frame-rate. Use the joystick to select the desired NO. OF FRAMES exposure. Note that the replay frame-rate is variable and so the term 'FRAME' can be a little misleading.

10. Tap down with the stylus to insert frame in the stack.

11. Now select the remaining frames in the stack, in order, assigning frame exposures as necessary, and tapping down to insert, as above.

12. On first selecting MAKE STACK, you will have observed the appearance of a new set of control panels:-

MOVE CEL	SINGLE SHOT
MAKE STACK	REVERSE
CYCLE STACK	LOOP
SHOW CELS	
30 FRAMES	

When you have completed assembling the stack, select CYCLE STACK. The stack may be cycled in one of three ways:

a.	SINGLE SHOT	-	1.2.3. END
b.	REVERSE	-	1.2.3.2.1.2.3 etc.
c.	LOOP	-	1.2.3.1.2.3 etc.

Select as necessary. Illuminate the green 30 FRAMES pink by tapping down, then use the joystick to adjust the replay frame-rate between 1 frame per second and 999 frames per second as required.

Swipe off the menu and the stack will cycle as instructed.

The cycling stack may be treated as a cutout and moved or positioned over pictures and picture-stencils to achieve whatever result is required. Note that if you wish to re-assemble a stack e.g. to change the running order or to assign new time-signatures to particular frames, selection of SHOW CELS will reproduce the 'film strip'.

ARCHIVING OF SEQUENCES AND STACKS ON FLOPPY DISC

a) Sequences

One floppy will accomodate a longer sequence it is necessary to split it into parts and archive each section.

b) Stacks

In order to archive a stack the following procedure must be used.

i) LIBRARY SAVE PICTURE to save the array of replicated cells.

ii) Use LIBRARY SAVE CUTOUT to save one cell. This is necessary to ensure the correct size information is archived.

iii) On another floppy disc use LIBRARY SAVE STENCIL to save the matching stencil.

This procedure saves all data except the running time for each cell.

To rebuild the stack first fetch the CUTOUT and use REPLICATE to generate an array of cells. Then fetch the PICTURE which will overwrite the array with the cells of the stack. Finally fetch the stencil. Now use Make Stack to rebuild the stack as required.